EVALUATION OF SALINE INFUSION SONOHYSTEROGRAPHY IN THE DIAGNOSIS OF ABNORMAL UTERINE BLEEDING IN PERIMENOPAUSAL AND POST MENOPAUSAL WOMEN

DISSERTATION submitted for M.D (Obstetrics and Gynaecolology)

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CERTIFICATE

This is to certify that the dissertation entitled ***" Evaluation of Saline infusion Sonohysterography in the diagnosis of abnormal uterine bleeding in perimenopausal and post menopausal women"*** *submitted by* ***Dr. R.Kavitha*** *to the faculty of Obstetrics & Gynaecology, The Tamilnadu Dr. M.G.R Medical university , Chennai is in partial fulfillment of the requirement for the award of MD Degree Branch II (Obstetrics and Gynaecology) is a bonafide research work carried out by her under our direct supervision and guidance .*

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CONTENTS

INTRODUCTION

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Life expectancy is now increased and we are in the era of geriartric medicine. Geriartric gynaecological interventions are on the increase. New innovations are coming up to provide the best management option with minimum morbidity to this group of women.

Preventive medicine is gaining more importance and more women entering the climacteric, apart form facing psychological derangements, are scared by taboos about malignancies of the genital tract.

1 in 20 women of 40-49 years, consult their gynaecologist with history of excessive bleeding per vaginum atleast once in their life time.

1 in 5 women in UK are undergoing hysterectomy before 60 years.Out of them, 50 percent women undergo hysterectomy for menorrhagia.

In 50 % of hysterectomies, the uterus removed has no local pathology.Uterus is just the target organ responding to the variations in Hypothalamo pituitary ovarian axis.

But before we conclude the uterus to be a mere innocent target organ, there should be conclusive evidence. A step towards such a conclusion should be cost effective, easily available and safe.

The idea of fractional curettage for all patients with perimenopausal and post menopausal abnormal uterine bleeding is now shifting towards

hysteroscopy guided biopsy. Such sophisticated investigations demand greater technical skill and expertise which most patients cannot reach.

Mere sonography can miss early malignancies & polyps. A simple modification of saline infusion sonohysterography [SIS],has become a handy tool, an alternative to hysteroscopy in the evaluation of abnormal uterine bleeding.

SIS can rule out malignancy with 100% sensitivity. But to confirm malignancy, further biopsy and HPE are mandatory.

The combination of sonohysterography & endometrial biopsy offers high sensitivity & negative predictive values for detection of endometrial & uterine pathology in patients with abnormal bleeding.

AIM OF STUDY

AIM OF STUDY

- To evaluate the efficacy of saline infusion sonohysterography in the investigation of abnormal uterine bleeding in perimenopausal and post menopausal women.

- To correlate the findings of saline infusion sonohysterography with histopathology of endometrium by fractional curettage and hysterectomy specimens.

MATERIALS AND METHODS

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STUDY DESIGN - prospective descriptive clinical Trial

TYPE OF ANALYSIS - qualitative analysis

NATURE OF STUDY - prospective cohort study

POPULATION UNDER STUDY - perimenopausal, post menopausal women attending gynaecological OPD in Govt. Rajaji hospital, Madurai

STUDY SAMPLE - 50 women in perimenopausal & post menopausal age group with complaints of abnormal uterine bleeding

INCLUSION CRITERIA - age 40-55 yrs

EXCLUSION CRITERIA

1. Unwilling patients
2. Suspected pelvic infection
3. profusely bleeding patients requiring therapeutic curettage.
4. premalignant/ malignant lesions of cervix
5. large myomas
6. cervical stenosis

METHODOLOGY

After detailed history, medical & gynaecological examination done. Verbal consent obtained.

Procedure is done on day 6 or 7 in patients with regular cycles or just after cessation of bleeding in those with irregular cycles.

All patients were subjected to standard TVS with empty bladder.

The TVS probe was removed & SIMS speculum was inserted to visualise the cervix , and the anterior lip was held with a volsellum

Cervix was cleaned with povidone iodine, 8 size infant feeding tube was slowly introduced into the uterine cavity

The probe was reintroduced into the vagina with the tube in situ . Sterile saline about 10 ml was slowly injected through the tube & cavity distended.

The uterus was scanned in longitudinal axis from one corner to other, then in transverse direction from fundus to cervix.

Those who complained of abdominal pain were given a single tablet mephenamic acid 500 mg.

All 50 patients were subjected to fractional curettage in the premenstrual phase & Histopathologic examination of endometrium done. Correlation between SIS findings and HPE studied.

35 patients underwent hysterectomy for various reasons like adenomyosis, fibroid uterus,endometrial hyperplasia,endometrial polyps. Correlation between SIS findings and cavities of uterine specimens studied.

REVIEW OF LITERATURE

The most probable etiology of abnormal uterine bleeding and the likelihood of serious endometrial pathology relates to the patients age .

In perimenopausal and postmenopausal patients especially in those with high risk factors like obesity, hypertension, diabetes, patients on HRT,etc, endometrial carcinoma has to be ruled out.

Presence of pathological lesions like polyps, fibroids, endometrial hyperplasia has to be identified before planning appropriate modality of management.In patients who by exclusion, have been diagnosed as having dysfunctional uterine bleeding hormone therapy makes it possible to avoid surgical interventions.

ANATOMY AND HISTOLOGY OF NORMAL ENDOMETRIUM

Endometrium is the specialized form of membrane lining the uterine cavity.

It is formed by a single layer of cuboidal or columnar epithelium which dips in to form tubular glands.

Stroma is made of loosely arranged connective tissue cells, blood vessels, lymphatics and leucocytes.

Endometrium shows cyclic histological and functional changes in relation to various phases of menstrual cycle.

Functionally divided into 2 zones

1. Functional layer-forms superficial 2/3 of the endometrium.This is the cyclical portion that responds to hormonal changes of normal ovulatory cycle. Has two layers, stratum compactum and stratum spongiosum.

2. basal layer – deep portion forming remaining 1/3 of the endometrium, not cyclical, contributes to regeneration.It does not respond to hormonal stimulation.

ENDOMETRIAL CYCLE

Described in detail by Noyes, Hertig & Rock in 1950.

FOLLICULAR PHASE

At the end of menstruation- endometrium measures 1mm, glands are broken, only basal layer remains .

Regrowth commences even in the absence of hormonal stimulation on the third or fourth day evidenced by healing of the surface epithelium.

Between fifth and fourteenth day of a regular 28 day cycle there is synchronous stromal, vascular and glandular growth.

In the early part of the proliferative phase, the glands are straight and tubular.

In the later part of the proliferative phase,glands become progressively convoluted and stromal edema appears.Late proliferative phase . Endometrium measures 2-3mm at the end of this phase.

SECRETORY PHASE –14 to 28th day , secretory changes and

This is characterized by stromal maturation and glandular secretion in response to progesterone produced by corpus luteum.

The first presumptive evidence of ovulation is the appearance of subnuclear vacuoles in glandular epithelium.

During mid secretory phase,the secretion of glandular epithelial contents occur.

Stromal edema reaches a peak on day 22 or 23.

Spiral artery differentiates and predecidual cells become apparent on day 23.

During the late secretory phase there is exhaustion of glandular secretory activity.The glands become tortuous and there is reduction in endometrial height due to regression of stroma.

Endometrium measures 8-10 mm. at the end of this phase.

Just before menstruation- decreased blood flow &infiltration with leucocytes occur.Over the next 24 hours ,a plane of separation becomes apparent through the spongy layer,which leads to the separation of superficial endometrium from the basalis.

HPOU AXIS & HORMONAL CYCLE

FSH → follicle maturation & estrogen production . Estrogen has postive feedback on LH→ LH surge & ovulation , corpus luteum synthesises progesterone which produces secretory changes in estrogen primed endometrium in the luteal phase.

PATHOLOGICAL LESIONS CAUSING ABNORMAL UTERINE BLEEDING

1.Endometrial hyperplasia

Endometrial hyperplasia represents a spectrum of biological & morphological alteration of endometrial glands ranging from exaggerated physiological state to carcinoma in situ.

The most recent classification by the International society of gynaecological pathologists is based on both architectural and cytological features and long term studies that reflect natural history of the lesion[21]

Types of hyperplasia

Sl.No	Typical	progression to carcinoma
1	Simple hyperplasia (cystic glandular)	1%
2	Complex hyperplasia (adenomatous)	3%
	Atypical	
1	Simple hyperplasia	8%
2	Complex hyperplasia	29%

[Novak et al.]

1. Simple (cystic glandular) – characterized by dilated or cystic glands with round to slightly irregular shape; increased glandular to stromal ratio with out glandular crowding and no cytologic atypia.
2. Complex (adenomatous hyperplasia) – increased no of glands, closely packed with little intervening stroma, multilayering of epithelium with budding and infolding.
3. Atypical hyperplasia – Both simple and complex hyperplasia can be associated with cytologic atypia. The nuclei are unusually large , pleomorphic, hyperchromatic.There is increased nuclear cytoplasmic ratios & prominent nucleoli with irregular clumping of chromatin and parachromatic clearing.

Most of the hyperplasia seem to remain stable (18%) or regress (74%)

– (kumar RJ etal 1985).

Premalignant potential of hyperplasia is influenced by the following factors .

1. Age of patient
2. Underlying ovarian disease
3. Endocrinopathies
4. Obesity
5. Exposure to exogenous estrogens (Hunter J E et al 1994)

2 Atrophic endometrium- postmenopausal

There is no functionalis layer and uterus is lined only by basalis layer. Stroma becomes fibrous and stromal cellularity diminishes. This is called senile cystic atrophy.

3.Endometrial Carcinoma

Grossly, endometrial carcinoma presents as either localized polypoidal tumor or as a diffuse tumour involving the endometrial surface. Histologically 80 % are adenocarcinoma , characterized by more or less well defined glandular patterns lined by malignant stratified columnar epithelial cells.

Histological classification

1. Adeno carcinoma - Usual type
   Variants - Villoglandular
   - Secretory
   - With squamous differentiation
2. Mucinous carcinoma

3. Papillary serous carcinoma
4 Clear cell carcinoma
4. squamous cell carcinoma
5. undifferentiated carcinoma
6. mixed carcinoma

4.Endometrial polyps

A mucous polyp otherwise called true adenoma occurs with or without associated endometrial hyperplasia.polyps can be single or multiple.The tumour is usually the size of a grape and is not larger than a pea.On section it shows endometrial glands and stroma.These may or may not respond to ovarian hormones.The cause of single mucous polyp is unknown.

Single endometrial polyps are common in the post menopausal uterus when they are mostly symptomless.Symptoms are more likely when the tip of the polyp becomes necrotic and ulcerated.Symptoms are usually bleeding pv,discharge pv or abdominal colic .

Multiple polyps are generally a manifestation of endometrial hyperplasia with persisting background of hyperestrogenism.

- Benign - Adenoma
  - leiomyoma
  - Placental
- Malignant
  - carcinoma
  - sarcoma

- choriocarcinoma

5.Leiomyoma-

Especially intramural and submucous fibroids cause abnormal uterine bleeding due to

- ❖ increase in endometrial surface area >200 cm sq.
- ❖ Associated endometrial hyperplasia.
- ❖ interference with normal myometrial contractility.
- ❖ endometrial venule ectasia and increased vascularity.
- ❖ infection & ulceration of submucous fibroid .

6.Other differential diagnosis for Abnormal uterine bleeding

1. Infection
   - cervicitis
   - endometritis
   - PID
2. Ovarian/ cervical malignancy
3. Adenomyosis
4. Systemic diseases – hepatic, renal disease, coagulopathy, leukemia
6. Drugs / Iatrogenic – IUCD , OCP
7. Endocrinological causes- Hypothyroidism, Hyperprolactinemia, Cushings disease, abnormality in HPOaxis, anovulatory cycles.

INVESTIGATIONS IN ABNORMAL UTERINE BLEEDING

1.DILATATON & CURETTAGE

Initially, D & C was the diagnostic procedure used to identify the histology of the endometrium in the evaluation of Abnormal uterine bleeding.

Recaimer invented the curet in 1943.

In 1958 total of 6907 D&C were reviewed and the concept was that curettage was simple and harmless, easy to perform even by the internist(word b et al) .It is therapeutic in 30% cases of Dysfunctional uterine bleeding.

Disadvantages

- Hospitalisation
- Risk of anesthesia
- Risk of perforation
- Risk of sepsis
- Bleeding
- Frequently misses uterine polyps
- Cannot diagnose submucous myoma
- Samples only 60% of endometrial surface.

2.OFFICE ENDOMETRIAL BIOPSY

In 1924, it was recommended that a diagnostic biopsy of the endometrium could be performed with out anesthesia.(Kelly h A 1925)

Using Novak Curette/ newer silastic curette or pipette suction curette , it can be done as an outpatient procedure requiring no anesthesia as these tools need no cervical dilatation.

Suction curette is 98% accurate in evaluating high risk women with abnormal bleeding for endometrial malignant disease.(Lutz Mn et al 1977)

Disadvantages

- not sensitive for detection of structural abnormalities
- polyps & fibroids cannot be diagnosed
- samples only 5% of endometrial surface.
- risk of uterine perforation
- pain & cramping during endometrial sampling
- vasovagal reaction can rarely occur.
- bleeding
- infection

In cervical stenosis- performance of biopsy is difficult

3.HYSTEROSALPINGOGRAPHY

- ❖ Not a suited mode of investigation in abnormal uterine bleeding
- ❖ Risk of radiation
- ❖ Iodine allergy may occur
- ❖ Myometrial abnormalities/ adnexal disorders cannot be diagnosed
- ❖ Polyps cannot be differentiated from sub mucous myomas.
- ❖ Complications like pain, intravasation of dye and granuloma formation may occur.

4.HYSTEROSCOPY

It is possible to visualize the cavity of the uterus with hysteroscopes incorporating fibre-optics.Hysteroscopy is used to exclude intra uterine pathology as a cause of abnormal bleeding.

Hysterscopic procedures were first described by Pantaleoni in 1869.

It is the gold standard procedure of investigation in Abnormal uterine bleeding, because it enables selective biopsy of the areas of visualized endometrium that appear neoplastic and also facilitates diagnosis of polyps, sub mucous myomas, intra uterine adhesions etc.

Hysteroscopic operations in selected cases can also prove therapeutic.It offers opportunity for removal of polyps .Intra uterine synechiae can be divided .Endometrial ablation procedures can also be done with hysteroscopy.

The procedure involves dilatation of the cervix followed by introduction of the hysteroscope.It has a side channel which permits the passage of the distension medium.For operative hysteroscopy,an additional channel permits the introduction of the resectoscope,roller ball or laser fibre.An outflow tract allows the fluid passing out to be collected in a bottle.

Special collecting bags have been deviced which are placed under the patient’s buttocks to collect any fluid leaking out of the vagina to allow an accurate estimation of the fluid deficit and prevent fluid overload.

Office hysteroscopy using new smaller diameter flexible or rigid hysteroscopes is coming up.This diagnostic procedure is done under local

anesthesia using a hysteroscope of smaller diameter less than 4 mm so that cervical dilatation is not required.

Disadvantages

- Cannot form first line of investigation in Abnormal uterine bleeding.
- Myometrial / adnexal abnormalities cannot be identified
- Expenditure
- Invasive
- Requires anesthesia for proper evaluation
- Can be done only in operation theatre set up
- Requires special expertise to handle the instrument
- Needs technical skill and knowledge to interpret
- Risk of intraoperative and postoperative bleeding
- Fluid retention
- Uterine perforation
- Gas embolism
- Infection
- Poor visibility if done with bleeding pv

5. TRANSVAGINAL SONOGRAPHY

Transvaginal sonography has been investigated as a screening tool in peri and post menopausal patients with Abnormal uterine bleeding.

The first report of TVS is attributed to kratochwil in 1969.The transvaginal sonography probe generates waves of a higher frequency,5.5 to 7.5MHz.

The use of transvaginal approach for imaging endometrium , myometrium and ovaries is superior to TAS because of the close proximity of the probe to uterus and adnexa.

Measurement of endometrial thickness includes the 2 layers – anterior& posterior wall at the thickest portion in the mid saggital plane. If the endometrial thickness is less than 5mm , the pathology would show either inactive or no endometrial tissue.(Nasri MN 1991) Post menopausal patients with endometrial echo of more than 4mm had sensitivity of 96% specificity 0f 68% for selecting endometrial pathology.(gell B,Karlsson B et al 2000)

6.SALINE INFUSION SONOHYSTEROGRAPHY

Sonographic evaluation of endometrium can be enhanced by instillation of sterile saline into the endometrial cavity as observed during transvaginal sonography. It is of particular use in assessment of patients with thickened endometrium on sonography, in patients with scanty tissue on D&C and also to identify location & extent of intra uterine synechiae or septa or polyps- Dodson et al.

“Fluid is sonologist’s friend”. This is known from the enhanced sonographic visualization we observe with polyhydramnios, fluid in the dominant follicle , 2nd trimester ultrasound. This concept led to the discovery of SIS.

The introduction of saline into the uterine cavity provides a contrast that helps localization of abnormalities as intracavitary,endometrial or submucousal.Fluid represents an excellent medium for transmission of sound waves and provides a good contrast to examine the endometrial cavity.

The saline also distends the endometrial cavity separating endometrial walls so as to visualize polyp that could be seen as the part of overall endometrial thickness, when both walls are measured together in the standard scan.

In 108 patients with Abnormal uterine bleeding it had an overall sensitivity comparable to the gold standard of hysteroscopy & better than either MRI or TVS

Dr Goldstein is the inventor of the Goldstein sonohysterography catheter and the principal investigator and teacher of the technique . In a recent study of 400 women with abnormal bleeding, 19% had no anatomic abnormality and needed no further diagnostic procedure other than SIS.(Goldstein SR 1996)

ADVANTAGES OF SIS

- ACCURACY

It definitely enhances the diagnostic potential of TVS in assessment of endometrium and intracavitary pathologies.(Bart Kowial R,Kaminski 2003)

Sonohysterography allows a precise diagnosis of benign uterine pathology which generally basal transvaginal ultrasonography can only suspect. The conclusion drawn is that this new method offers an important aid for gynaelogical diagnosis of benign pathology.(Dodero D,Corticelli A 2001)

With out SIS the diagnosis of focal lesions such as polyps, submucous myomas & focal hyperplasia would have been missed .(Jones K,Bournet 2001)

- Easy to use

  most authors encountered no failures(cullinan JA,Heischer AC 1995)
- Cost effectiveness

  Apart from catheter, syringes, saline, the technique does not have additional requirements other than those needed for standard TVS(Epstein E,laife-Narin Sl 1999)
- Minimally invasive
- Needs no anesthesia
- Needs no prior cervical dilatation
- Provides excellent visualization of endometrial cavity
- Can differentiate polyps & sub mucous myoma
- Intramural and adnexal pathology can be simultaneously studied
- Unlike TVS,SIS can detect focal hyperplasia .Endometrial thickness of each wall is measured separately identifying focal thickening(bron Z,L sulter T,Russia 1997)
- No risk of ionizing radiation
- No risk of perforation

INDICATIONS OF SONOHYSTEROGRAPHY

1. Abnormal uterine bleeding in peri and post menopausal women.

   Evaluation of abnormal uterine bleeding necessitates excluding local causes especially in peri and post menopausal patients.(Weeks AD, Duffy SRG 1996)

2. Evaluation of endometrium that is thickened irregular or poorly visualized in conventional TVS
3. Follow up of women receiving HRT
4. Follow up of women receiving tamoxifien
5. Follow up in cases of conservative management of endometrial hyperplasia
6. Presurgical evaluation of intracavitary fibroids
7. Infertility & recurrent pregnancy loss

Saline hysterography in these patients is a reliable alternative that can avoid hysteroscopy in those patients with out a septum & guides resection in those with septate uterus(Clifford K,Regan L 1994)

8. Secondary amenorrhea – due to Asherman's syndrome, SIS can avoid the use of hysteroscopy in those without such adhesions and guide resection in those with adhesions.(Asherman 1948, pinion 1944)

9. Assisted reproductive technology- patients undergoing ART are often investigated for abnormalities of uterine cavity such as fibroid ployps & uterine septae which need resection to avoid failure of implantation.(Ayida G,Chamberlain B 1997)

NORMAL FINDINGS OF SIS

The procedure is best done in proliferative phase when the endometrium is thin to facilitate detection of polyps.(Lindheim SR,Morales AJ 2002)

1. Normal endometrial cavity should distend symmetrically, is well demarcated and surrounded by anechoic saline.
2. Homogenous single layer thickness of endometrial lining in relation to phase of menstrual cycle.
3. Fluid in culdesac – indicating patent fallopian tubes.(Laifer-Narin SL 1999)

ABNORMAL FINDINGS IN SIS

1. Endometrial polyps appear as protrusions into the cavity and move characteristically upon injecting saline.(Lasek W,Migda M 2004)This movement differentiates the polyps from blood clots which can be displaced anywhere in the cavity.

2. Intracavitary & sub mucous fibroids – appear as filling defects with mixed echogenicity that is different to the endometrium with which they are usually covered.(Baldwin MT,Dudiak KM 1999)Extension of fibroids upto serosal surface of uterus has to be

noted as resection of fibroids should not be attempted in these cases.

3. Focal endometrial thickening

Endometrial thickness of each wall is measured separately identifying focal thickening.(Bron Z LSubtert 1997)This will later guide biopsy at hysteroscopy.

Irregularity in the surface of endometrium,heterogenecity of the endometrium,irregularity of the junction between the endometrium and the myometrium and uniform increased echogenecity of the endometrium all raise the suspicion of malignancy.

4. Abnormalities of uterine cavity

Intrauterine adhesions and malformations of uterine cavity appear as immobile connections between the uterine wall.(Parsons AK,Lanv 2 1993)If adhesions are thick and wide spread,distension of the cavity will be difficult.

Incomplete separation of the anterior and posterior uterine walls,in longitudinal sections of the uterus denotes intrauterine synechiae and can give the uterus a bow tie appearance on transverse sections.

Malformations of the uterine cavity could cause much thicker connections between the anterior and posterior walls.

5. endometrial atrophy

LIMITATIONS

1. Pregnancy has to be ruled out before the procedure.
2. PID–As with all forms of uterine instrumentation,this test should only be performed after pelvic infection has been excluded.Patients with history of chronic pelvic infection are given a course of the Doxycycline.(Linheim SR,Morales A5 2002)
3. In submucous fibroids obliterating cavity larger than 4 cm the cavity cannot be adequately distended
4. cervical stenosis can be managed by dilating the cervix under local anesthesia.(Wilrich J,Bradley Ld 1996)
5. Extensive intrauterine synechiae may limit feasibility of the procedure
6. Patients may develop occasionally uterine cramps that can be avoided by oral antispasmodics before the procedure.(Bonnamy L,Marret H,2002)

COLOUR DOPPLER IMAGING

Colour Doppler and blood flow analysis in combination with SIS is generally promising in identifying patients with endometrial carcinoma and differentiating between benign & malignant uterine tumors .Malignant tumours have neovascularisation and angiogenesis.

COMPUTERISED TOMOGRAPHY

Computerised Tomography with contrast enhancement enables the pelvic organs to be delineated clearly.

It is used for staging endometrial carcinoma with accuracy of 84% to 88%.

CT is a useful non invasive test to differentiate disease confined to uterus from extrauterine pelvic and abdominal spread.

Lymph node involvement is well demonstrated.But its role as a screening procedure is not appealing.

MAGNETIC RESONANCE IMAGING

This is the latest addition to the diagnostis modalities but it is still not available in most parts of the developing world.

Is the study of choice for accurate staging of endometrial carcinoma.Abnormalities can be detected in about 84% of patients with endometrial carcinoma.MR is advantageous over CT because of no radiation exposure ,imaging is mutiplanar,no contrast is required ,soft tissue resolution is superior to CT.But it is expensive.

35 patients underwent hysterectomy for various reasons like adenomyosis, fibroid uterus,endometrial hyperplasia,endometrial polyps. Correlation between SIS findings and cavities of uterine specimens studied.

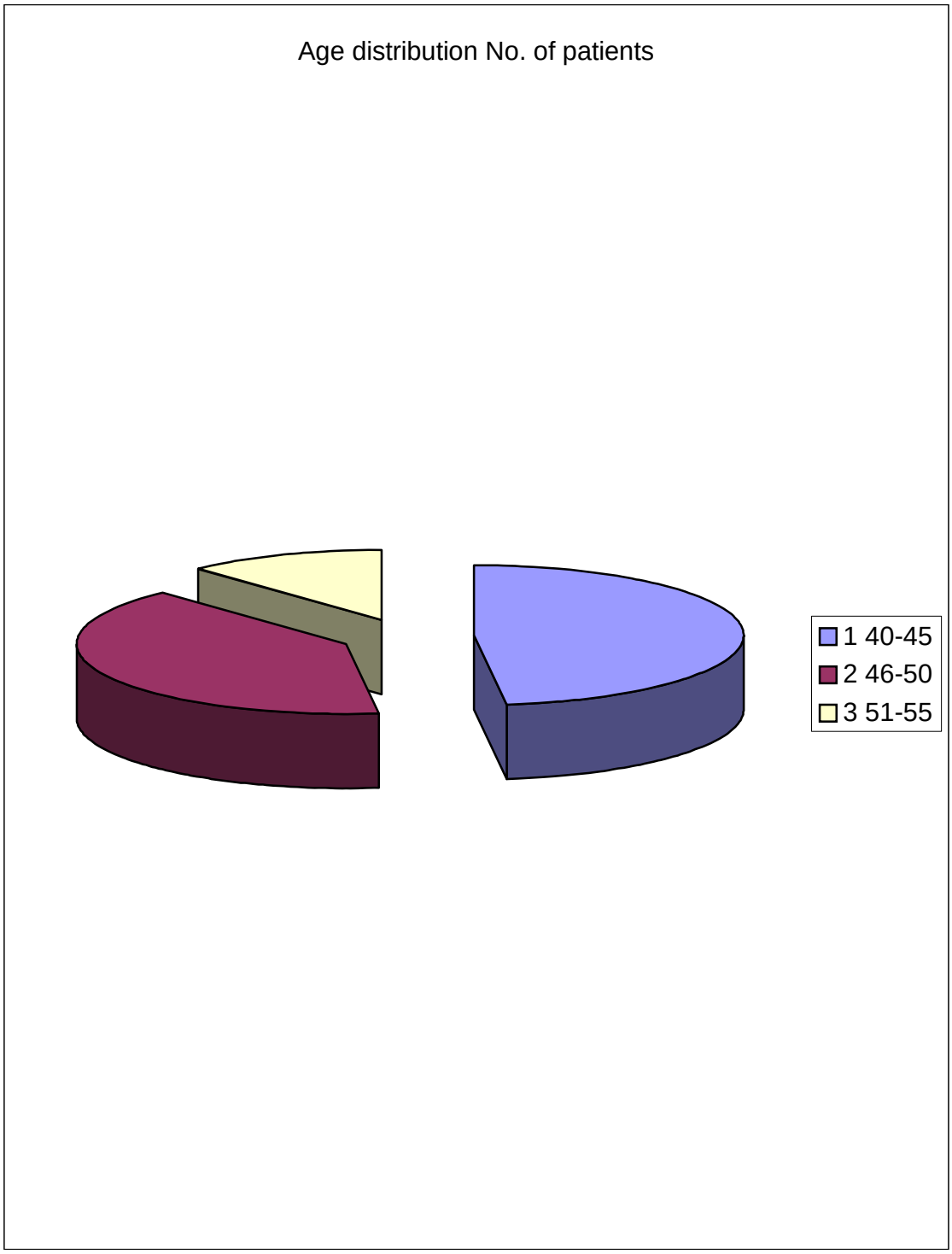
RESULTS

AGE DISTRIBUTION

TABLE 1

S.No	Age in years	No. of patients	Percentage
1	40-45	24	48
2	46-50	20	40
3	51-55	6	12

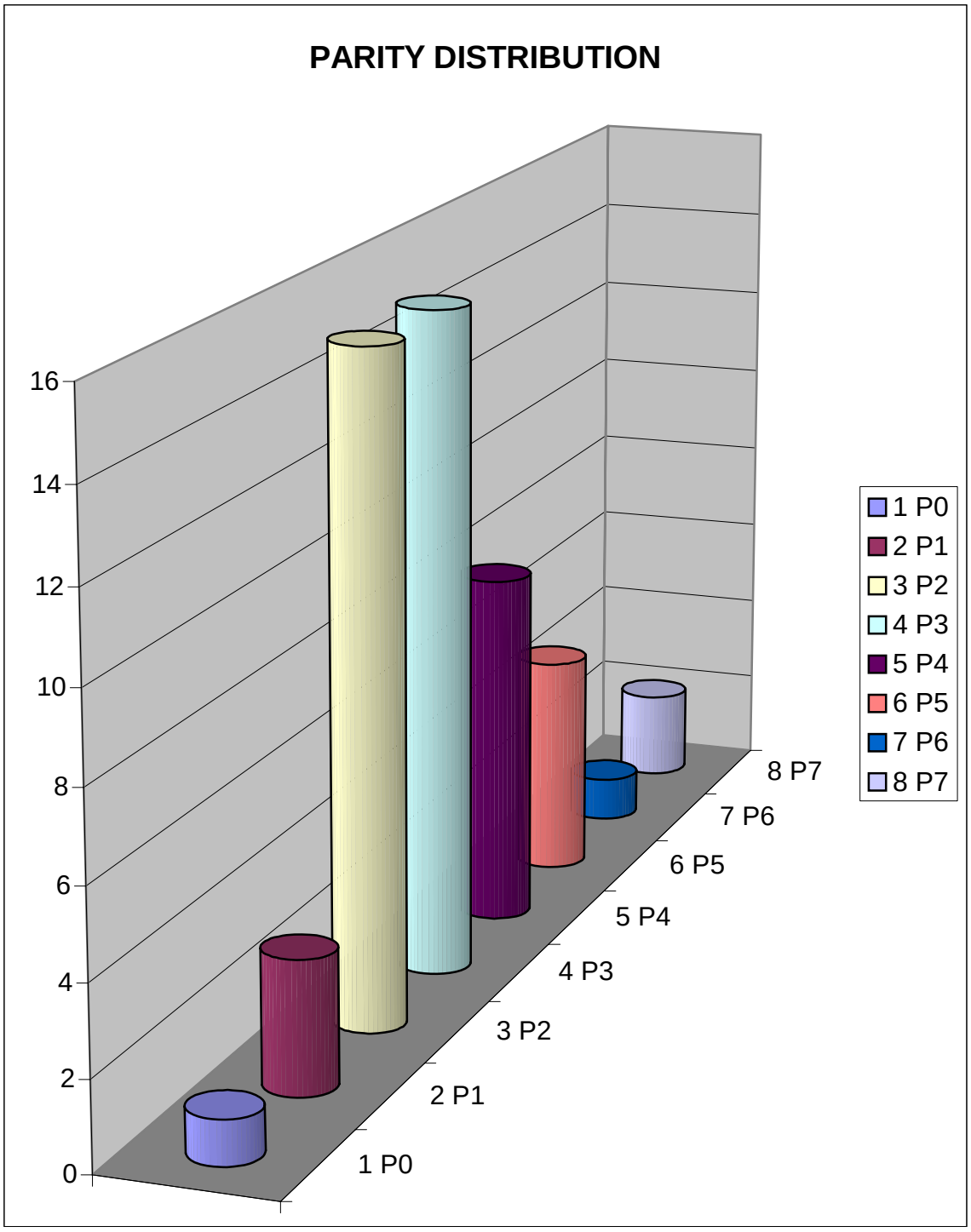
88% of patients taken up for study belonged to 40-50 yrs. Only 12% were in the age group of 51-55 yrs .


Age distribution No. of patients
1 40-45
2 46-50
3 51-55

PARITY DISTRIBUTION
TABLE 2

S.No	Parity	No. of patients	Percentage
1	P0	1	2
2	P1	3	6
3	P2	15	30
4	P3	15	30
5	P4	8	16
6	P5	5	10
7	P6	1	2
8	P7	2	4

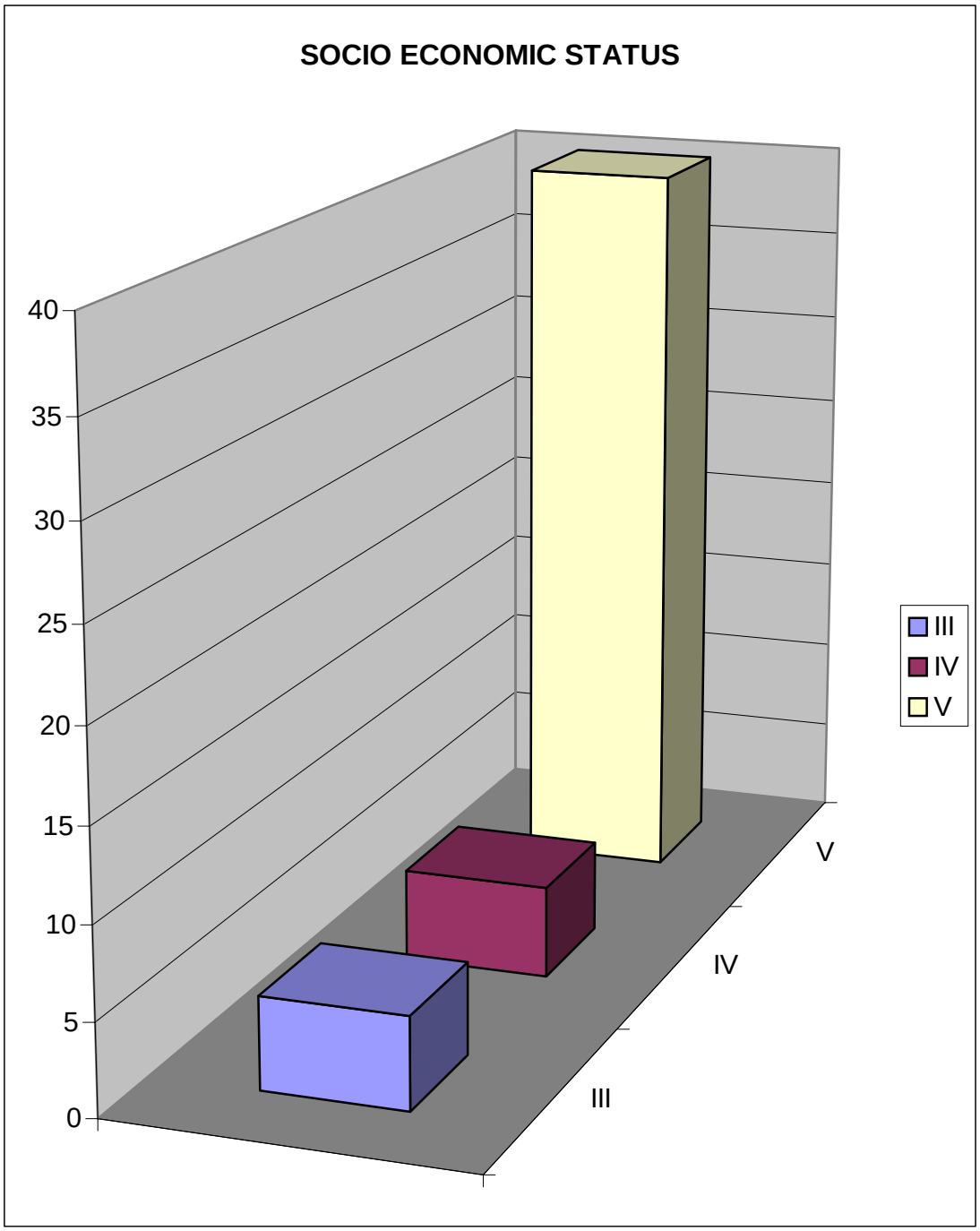
60% patients belonged to para2 & para3 .Only 2% was nullipara.
32 % patients were para4 and above.


PARITY DISTRIBUTION
16
14
12
10
8
6
4
2
0
1 P0
2 P1
3 P2
4 P3
5 P4
6 P5
7 P6
8 P7
1 P0
2 P1
3 P2
4 P3
5 P4
6 P5
7 P6
8 P7

SOCIO ECONOMIC STATUS
TABLE 3

Class	No. of patients	Percentage
III	5	10
IV	5	10
V	40	80

80% patients were belonging to low socio economic status.

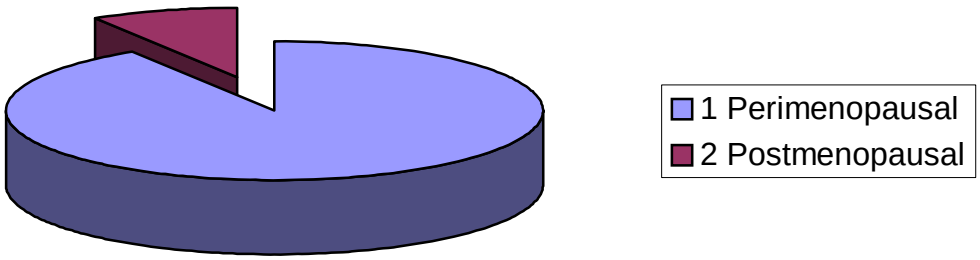

SOCIO ECONOMIC STATUS
40
35
30
25
20
15
10
5
0
III
IV
V
III
IV
V

DISTRIBUTION OF PERI AND POST MENOPAUSAL ABNORMAL UTERINE BLEEDING
TABLE 4

S.No	Type of AUB	No. of patients	Percentage
1	Perimenopausal	41	82
2	Postmenopausal	9	18

82% of patients included in the study had perimenopausal abnormal uterine bleeding .18% were postmenopausal patients.

TYPE OF ABNORMAL UTERINE BLEEDING

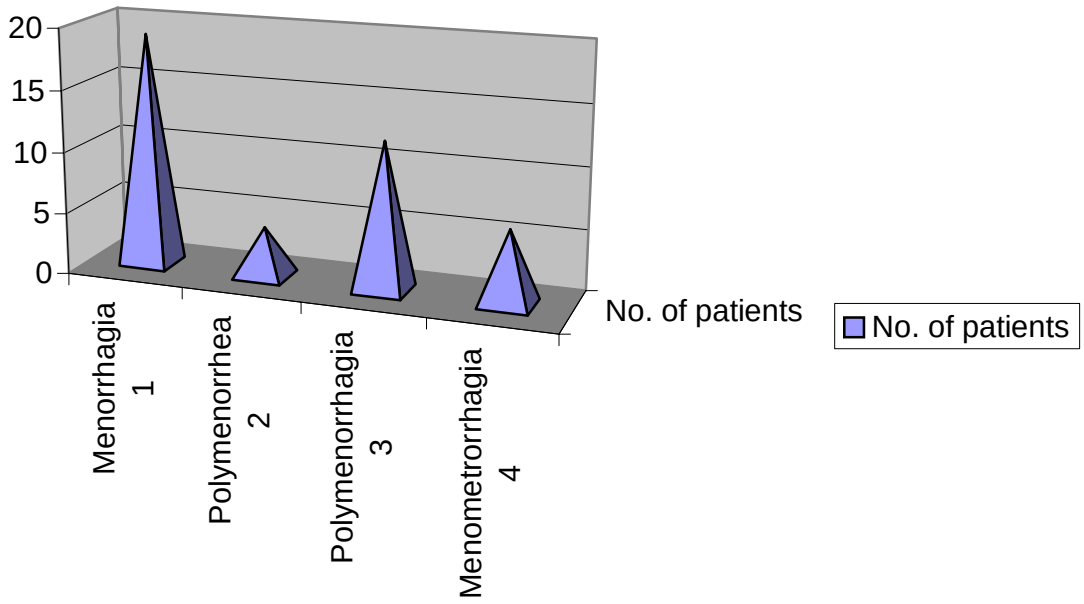


CLINICAL PRESENTATION OF PERIMENOPAUSAL AUB
TABLE 5

S.No	Clinical presentation	No. of patients	Percentage
1	Menorrhagia	19	46.34
2	Polymenorrhea	4	9.75
3	Polymenorrhagia	12	29.26
4	Menometrorrhagia	6	14.63

Almost 75% patients had either polymenorrhagia or menorrhagia. Nearly 10% had polymenorrhea & 14.6% had menometrorrhagia

CLINICAL PRESENTATION -PERIMENOPAUSAL AUB

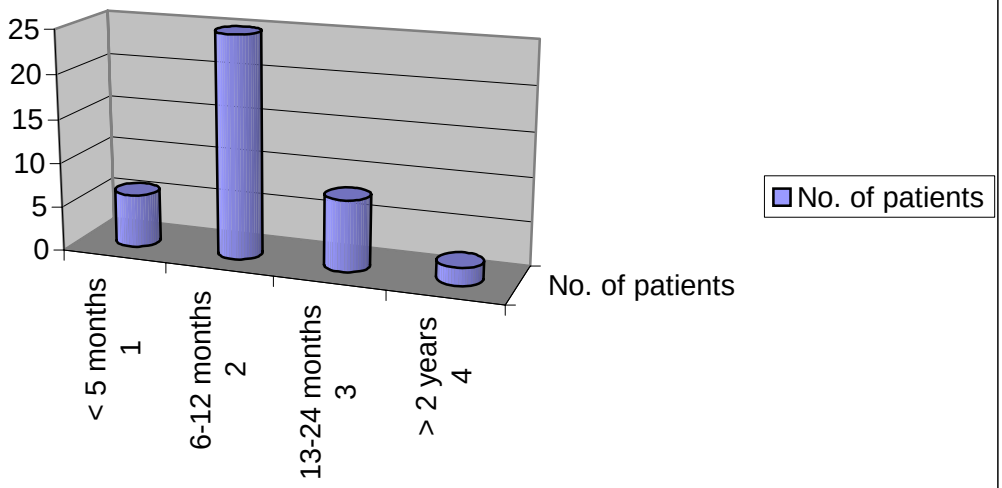


DURATION OF SYMPTOMS – PERIMENOPAUSAL
TABLE 6

S.No	Duration	No. of patients	Percentage
1	< 5 months	6	14.63
2	6-12 months	25	60.97
3	13-24 months	8	19.51
4	> 2 years	2	4.87

Nearly 75 % percent patients reported to the hospital with in 1 year of onset of symptoms. Only 4.8% reported late after 2 years and about 20 % reported with in 1-2 yrs.

DURATION OF SYMPTOMS-PERIMENOPAUSAL PATIENTS

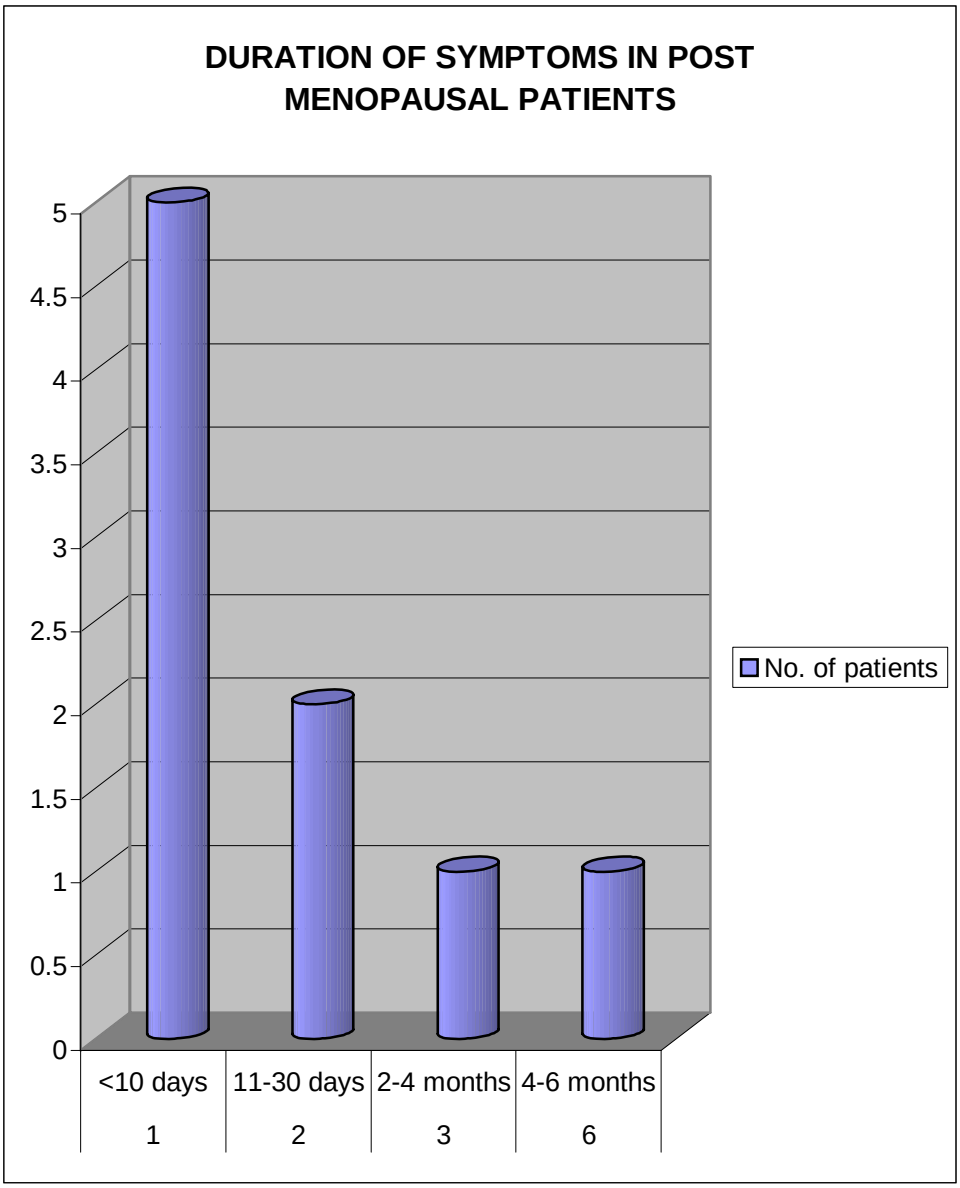


DURATION OF SYMPTOMS IN POSTMENOPAUSAL PATIENTS

TABLE -7

S.No	Duration	No. of patients	Percentage
1	<10 days	5	55.55
2	11-30 days	2	22.22
3	2-4 months	1	11.11
6	4-6 months	1	11.11

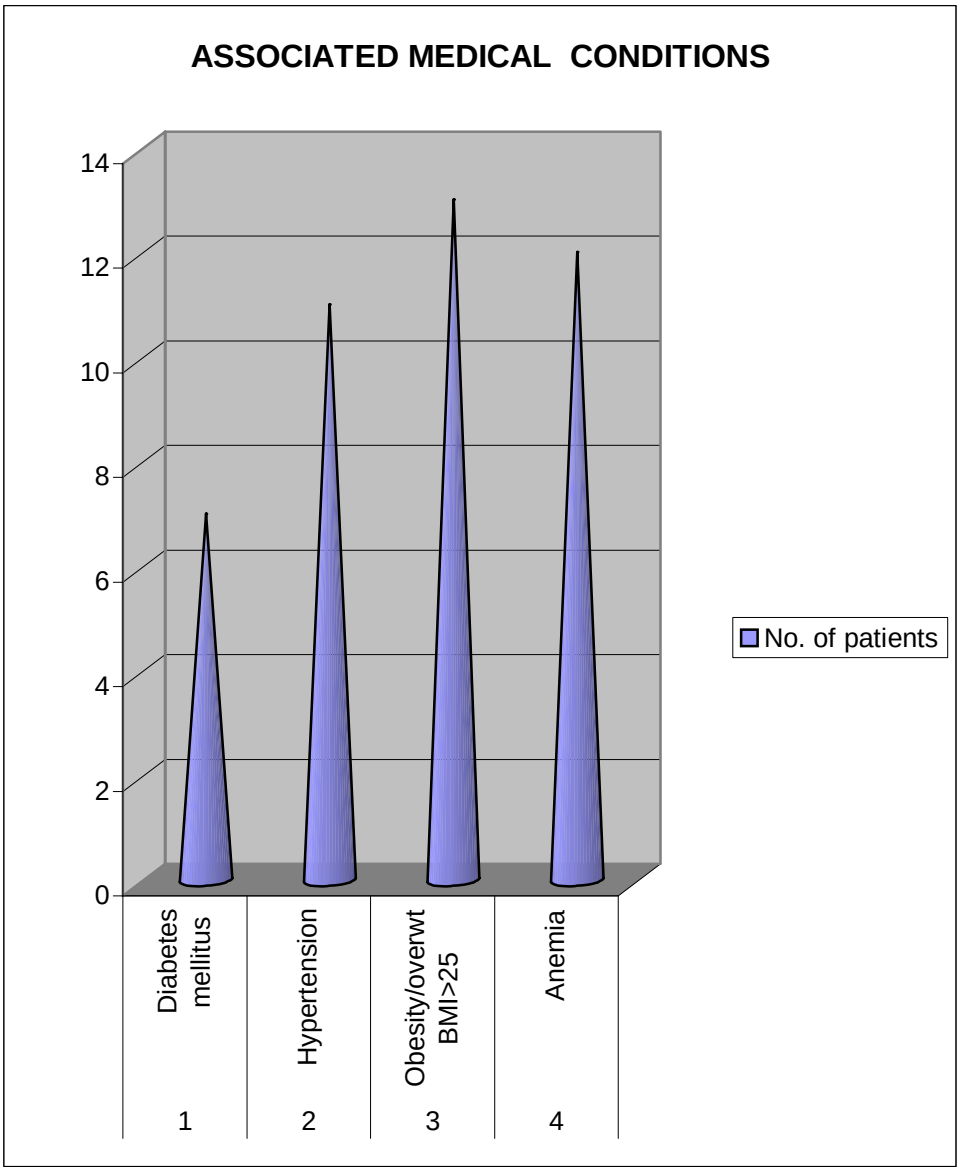
Nearly 77% patients reported with in 1 month of symptom onset. Only about 22% reported late with in 6 months.Only one patient has adenocarcinoma endometrium.She had bleeding per vaginum for 6 months.


DURATION OF SYMPTOMS IN POST MENOPAUSAL PATIENTS
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
<10 days
1
11-30 days
2
2-4 months
3
4-6 months
6
No. of patients

ASSOCIATED MEDICAL CONDITIONS
TABLE -8

S.No	Medical disorders	No. of patients	Percentage
1	Diabetes mellitus	7	14
2	Hypertension	11	22
3	Obesity/overwt BMI>25	13	26
4	Anemia	12	24

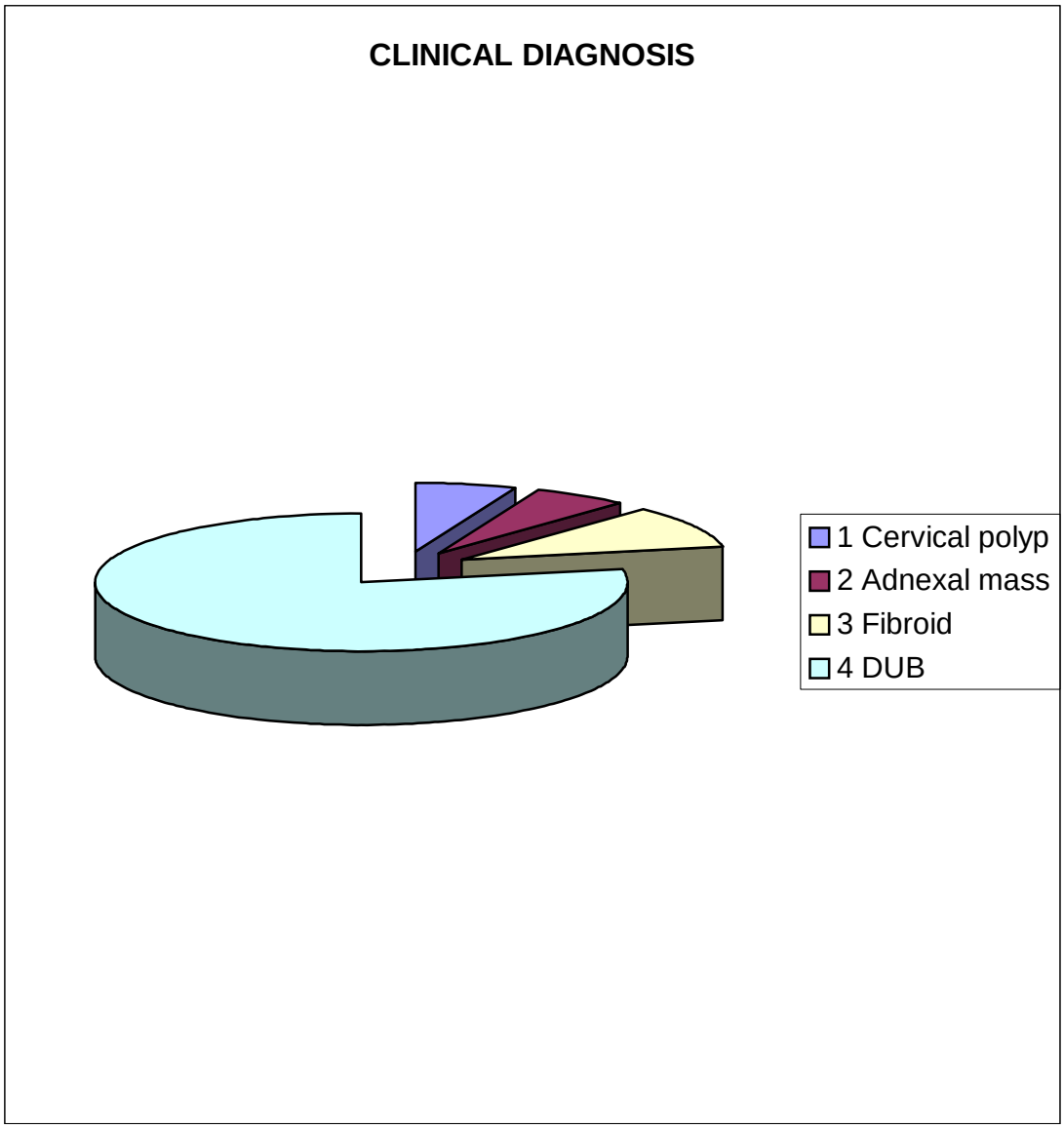
14 % patients were diabetic, 22% had hypertension.26% had BMI >25. 6% were both hypertensive & diabetic.24%of patients were severely anemic requiring blood transfusions.


ASSOCIATED MEDICAL CONDITIONS
14
12
10
8
6
4
2
0
Diabetes mellitus
Hypertension
Obesity/overwt BMI>25
Anemia
1
2
3
4
No. of patients

CLINICAL DIAGNOSIS
TABLE- 9

S.No	Clinical findings	No. of patients	Percentage
1	Cervical polyp	3	6
2	Adnexal mass	3	6
3	Fibroid	5	10
4	DUB	39	78

On clinical examination,3(6%) patients had cervical polyp.Out of which 2(4%)were mucous polypi and 1(2%) was a myomatous polyp.All three underwent polypectomy.Out of 3 (6%)adnexal masses,1(2%) turned out to be hydrosalpinx,2(4%) were functional cysts of ovary.39(78%) patients were clinically diagnosed as dysfunctional uterine bleeding.

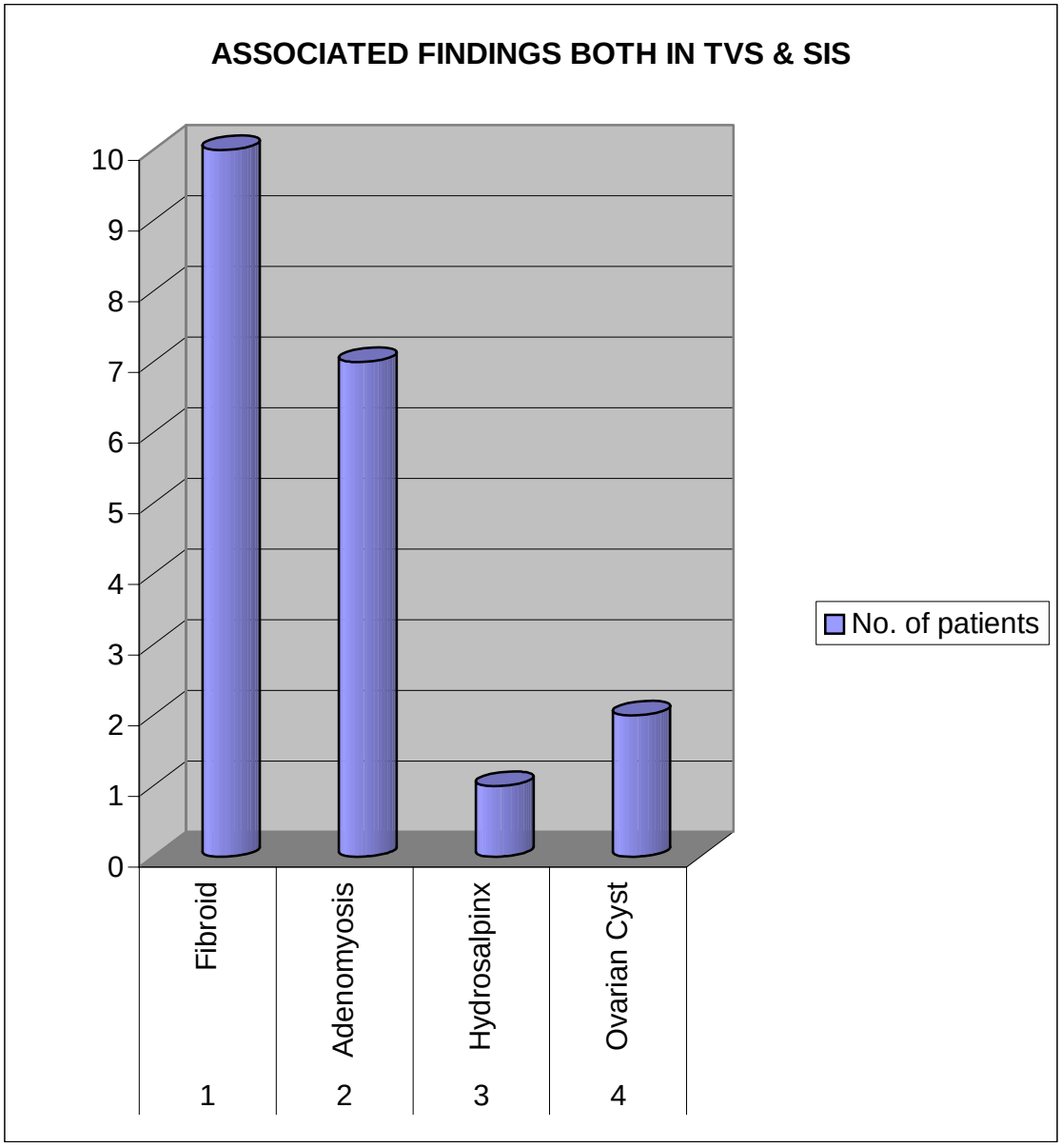

CLINICAL DIAGNOSIS
1 Cervical polyp
2 Adnexal mass
3 Fibroid
4 DUB

ASSOCIATED FINDINGS BOTH IN TVS & SIS
TABLE 10

S.No	Findings	No. of patients	Percentage
1	Fibroid	10	20
2	Adenomyosis	7	14
3	Hydrosalpinx	1	2
4	Ovarian Cyst	2	4

TVS and SIS showed that associated fibroids were present in 10(20%) patients.

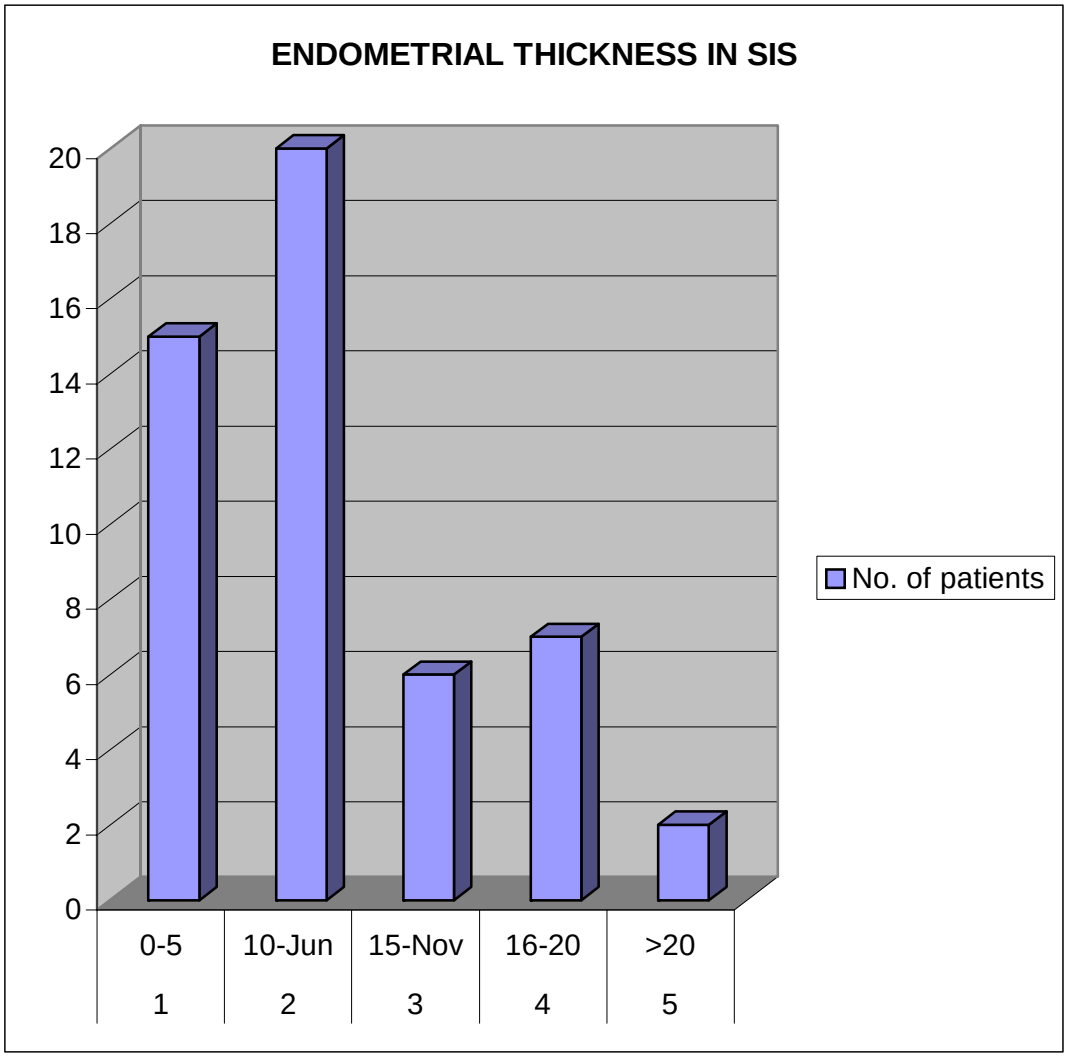
7(14%) patients had Adenomyosis. Hydrosalpinx was present in 1(2%) patient and ovarian cyst in 2(4%) patients ,both were functional cysts.


ASSOCIATED FINDINGS BOTH IN TVS & SIS
10
9
8
7
6
5
4
3
2
1
0
Fibroid
1
Adenomyosis
2
Hydrosalpinx
3
Ovarian Cyst
4
No. of patients

ENDOMETRIAL THICKNESS IN SIS
TABLE 11

S.No	Thickness	No. of patients	Percentage
1	0-5	15	30
2	6-10	20	40
3	11-15	6	12
4	16-20	7	14
5	>20	2	4

Endometrial thickness is the sum of thickness of anterior & posterior endometrium at the thickest portion after distension of cavity. It was uniformly equal in 46(92%) patients except in 4(8%) who had focal thickening of endometrium in one wall.Thickness >5 mm is considered hyperplasia in the post menstrual phase.35(70%) patients had hyperplasia according to SIS.

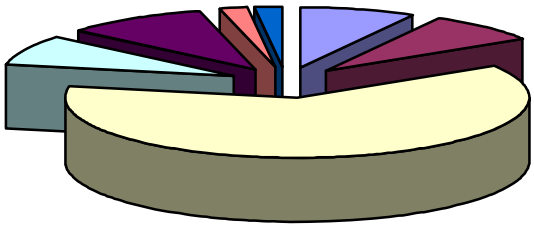

ENDOMETRIAL THICKNESS IN SIS
20
18
16
14
12
10
8
6
4
2
0
0-5
1
10-Jun
2
15-Nov
3
16-20
4
>20
5
No. of patients

FINDINGS DIAGNOSED ONLY BY SIS
TABLE 12

S.No	Age in years	No. of patients	Percentage
1	Endometrial polyp	4	8
2	Submucous fibroid	4	8
3	Generalised thickened endometrium	31	62
4	Focal thickening of endometrium	4	8
5	Intramural fibroids distorting cavity	5	10
6	Suspected malignancy- polyp	1	2
7	Suspected malignancy-focalH	1	2

Fibroids were present in 11 (22%).3(6%) patients with submucous fibroids had associated intramural fibroid.Out of 4(8%)polyps identified, 2(4%) turned out to be adenomatous polypi, 1(2%) was a myomatous polyp with a pedicle .1(2%) patient with irregular polypoidal projections into the cavity had adenocarcinoma endometrium.

FINDINGS DIAGNOSED ONLY BY SIS



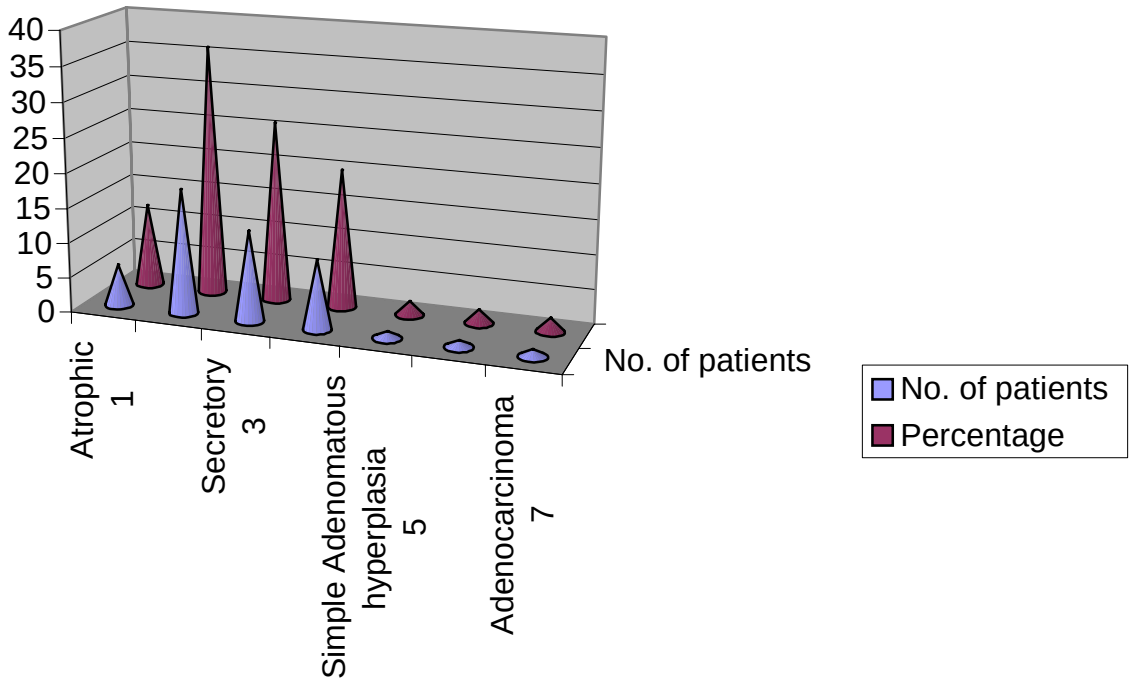
- 1 Endometrial polyp
- 2 Submucous fibroid
- 3 Generalized thickened endometrium
- 4 Focal thickening of endometrium
- 5 Intramural fibroids distorting cavity
- 6 Suspected malignancy polyp
- 7 Suspected malignancy- focal H

HPE OF ENDOMETRIUM BY FRACTIONAL CURETTAGE
TABLE 13

S.No	Type of endometrium	No. of patients	Percentage
1	Atrophic	6	12
2	Proliferative	18	36
3	Secretory	13	26
4	Cystoglandular Hyperplasia	10	20
5	Simple Adenomatous hyperplasia	1	2
6	Atypical adenomatous hyperplasia	1	2
7	Adenocarcinoma	1	2

5(10%) patients had atrophic endometrium, 18 (36%)patients had proliferative endometrium,13 (26%)had secretory endometrium.Endometrial hyperplasia was seen in 12(24%) patients,out of which 10(20%) had cystoglandular hyperplasia,1(2%) simple adenomatous hyperplasia,1(2%)atypical adenomatous hyperplasia.Adenocarcinoma was seen in 1(2%) patient.

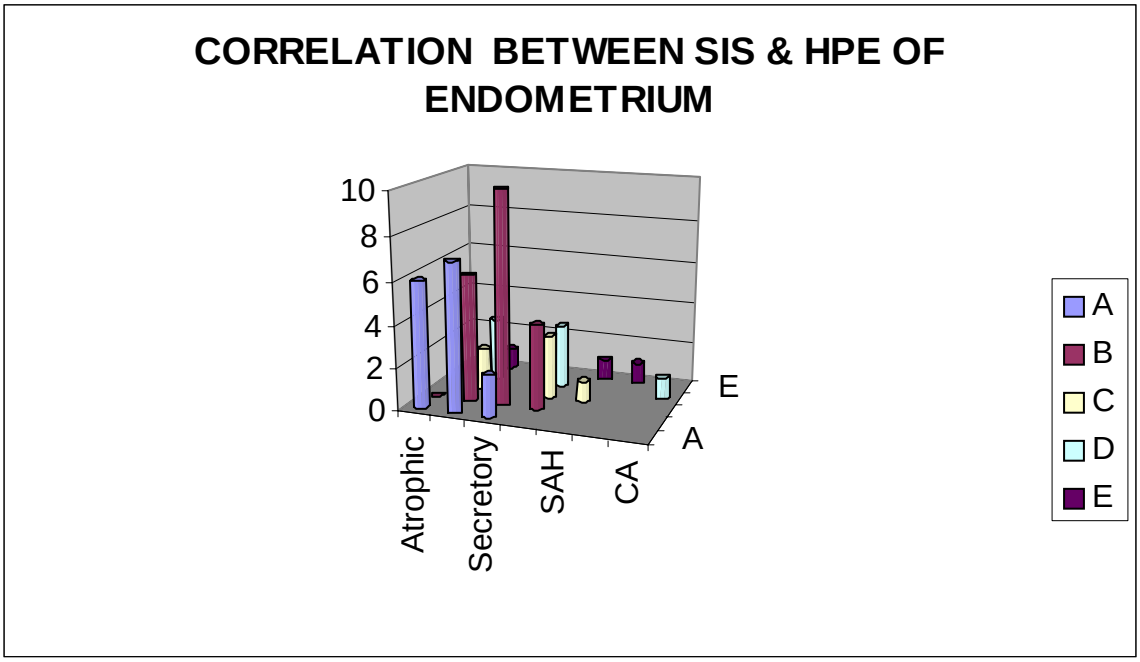
HPE OF ENDOMETRIUM BY FRACTIONAL CURETTAGE



CORRELATION BETWEEN SIS & HPE
TABLE 14

S.NO	Thickness mm	Atrophic	Proliferative	Secretory	CGH	SAH	AAH	CA
1	A (0-5)	6(40%)	7(46.66%)	2(13.33%)	-	-	-	-
2	B(6-10)	-	5(25%)	11(55%)	4(20%)	-	-	-
3	C (11-15)	-	2(33.33%)	-	3(50%)	1(16.66%)	-	-
4	D(16-20)	-	3(42.85%)	-	3(42.85%)	-	-	1(14.28%)
5	E >20	-	1(50%)	-	-	-	1(50%)	-

Out of 31(62%)cases with globally thickened endometrium ,32.25% had proliferation, 35.48% had secretory endometrium, 29.03% had cystoglandular hyperplasia and 3.22% had simple adenomatous hyperplasia.. Out of 4(8%) focal hyperplacia,atypical adenomatous hyperplacia,disorderly proliferative endometrium,cystoglandular hyperplasia,adenomocarcinoma were equally distributed 1(25%) patient each.



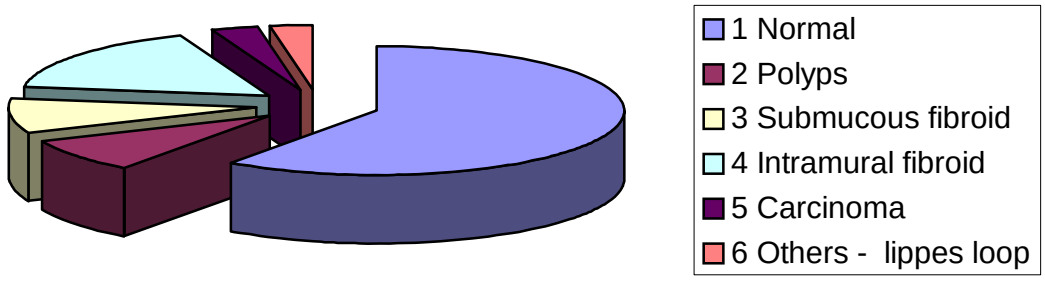
HYSTERECTOMY SPECIMENS- CAVITY
TABLE 15

S.No	Cavity	No. of patients	Percentage
1	Normal	21	60
2	Polyps	3	8.57
3	Submucous fibroid	3	8.57
4	Intramural fibroid	6	17.14
5	Carcinoma	1	2.85
6	Others - lippes loop	1	2.85

Out of 50 cases, 35(70%)underwent hysterectomy for fibroid, adenomyosis, endometrial hyperplasia, endometrial polyps and carcinoma endometrium

21 (60%)patients had normal cavity on cut section. 3(8.57%) polyps were identified, 3(8.57%) submucous fibroids , 6 (17%)specimens showed distortion of cavity by intramural fibroids, 1 (2.85%)had lippes loop,1(2.85%) showed features of carcinoma endometrium friable proliferative growthwith necrosis filling the cavity.

HYSTERECTOMY SPECIMENS- CAVITY



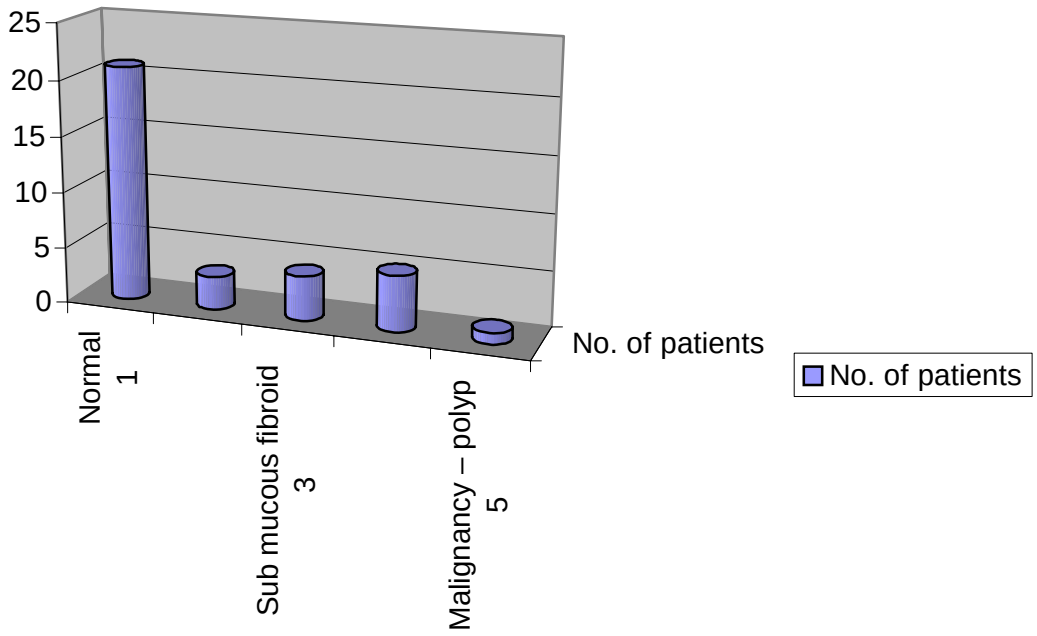
CORRELATION BETWEEN SIS AND HYSTERECTOMY SPECIMENS
TABLE -16

S.No	Cavity	SIS	Hysterectomy
1	Normal	21	21
2	Polyp(benign)	3	3
3	Sub mucous fibroid	4	3
4	Intramural fibroid discretions cavity	5	6
5	Malignancy – polyp - hyperplasia	1 1	1 1
6	Foreign body	1	1

Cavity was normal in 21(60%) cases both in SIS and hysterectomy specimens.

Diagnosis of polyps were 4(11.4%) in SIS, 3(8.5%) benign and 1(2.8%) suspected malignant. But in the specimen only 3 (8.5%)benign polyps were identified, the suspected malignant polyp was actually, a foreign body- lippes loop. Diagnosis of sub mucous fibroids were 4(11.4%) by SIS but only 3(8.5%) were actually submucosal in specimens. The other case of suspected malignancy with focal irregular polypoid projections showed features of carcinoma endometrium in actual specimen also.

CORRELATION BETWEEN SIS & HYSTERECTOMY SPECIMENS



COMPLICATIONS

TABLE -17

S.No	Complications	No. of Patients	Percentage
1.	Post procedure pain	2	4%
2.	Others	Nil	-

Only 4% patients complained of abdominal pain after the procedure. There was no other complications.

COMPARISON OF HPE AND SIS
TABLE 18

True positives	True negatives	sensitivity	PPV
13	15	15	37
False positives	False negatives	specificity	NPV
22	-	42	100

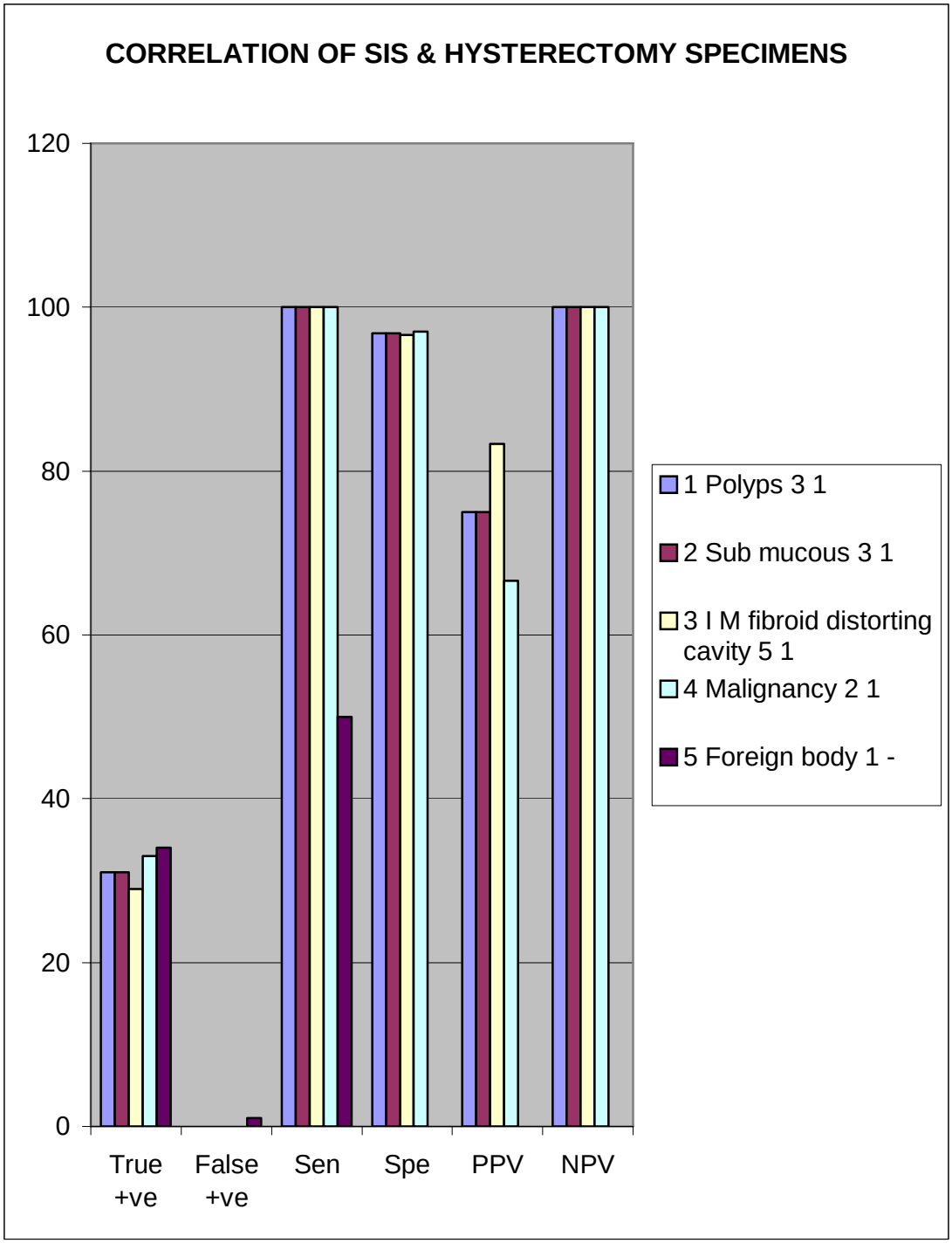
When findings of histopathologic examination of endometrium was taken as the confirmatory ,SIS findings had 22(44%) false positives and no false negatives.There were 13(26%) true positives and 15(30%) true

negatives.Sensitivity and Negative predictive value 100% but Specificity and Positive predictive value were 42% and 37% respectively.

COMPARISON OF SIS FINDINGS & HYSTERECTOMY SPECIMENS
TABLE 19

S.No	Lesion	True +ve	False +ve	True -ve	False -ve	Sen	Spe	PPV	NPV
1.	Polyps	3	1	31	-	100	96.85	75	100
2	Sub mucous fibroid	3	1	31	-	100	96.85	75	100
3	I M fibroid distorting cavity	5	-	29	1	83.33	100	100	96.66
4	Malignancy	2	1	33	-	100	97	66.6	100

Taking the findings of hysterectomy specimens on cut sections as the gold standard SIS findings were compared.There was one false positive (2.85%) in diagnosis each of polyp submucousal fibroid and malignancy.There was one(2.85%)negative in the diagnosis of intra mural fibroid distorting cavity.Sensitivity and negative predictive value were each 100% for polyps,submucous fibroid and malignancy.But for intra mural fibroid distorting cavity sensitivity was 83.33% and negative predictive value was 96.66% while specificity and positive predictive value were 100%.For polyps,submucous fibroid,malignancy,specificity and positive predictive value were 96.85%,96.85%,97% and 75%,75%,66.6% respectively.


CORRELATION OF SIS & HYSTERECTOMY SPECIMENS
120
100
80
60
40
20
0
True +ve
False +ve
Sen
Spe
PPV
NPV
1 Polyps 3 1
2 Sub mucous 3 1
3 I M fibroid distorting cavity 5 1
4 Malignancy 2 1
5 Foreign body 1 -

DISCUSSION

Abnormal uterine bleeding is common in the peri and post menopausal women. The etiology varies from simple dysfunctional uterine bleeding to benign lesions like polyps and malignancies.Apart from the clinical examination, various diagnostic modalities are available to confirm our diagnosis.

In our study the efficacy of Saline infusion sonohysterography in diagnosing abnormal uterine bleeding and its correlation with histopathology of endometrium by fractional curettage and hysterectomy specimens was studied.

In our study 88% patients belonged to 40-50 yrs .Only 12% were in 51-55 yrs age group. *In study by valenzano, Lijoi D, 2003 ,out of 73 pts, 64% were of median age 38.9 years, 35.6% were in median age 60.5 years 32*. A few post menopausal women >50 yrs had to be excluded because of cervical stenosis which prevented effective intrauterine catheterisation

In our study only 2% were nulli para .60% were para2 and para3.Nulliparous women have 2 to 3 times relative risk of developing endometrial carcinoma.(Novak et al)In women of low parity with abnormal uterine bleeding most common etiology is fibroid uterus.

In our study majority of patients belonged to low socio economic status.High prevalence of pelvic inflammatory and lower genital tract lesions in this class of patients led to the exclusion of many patients from the study.This group of patients also have decreased awareness towards appropriate health care facilities and novel investigations like hysteroscopy.

In our study 82 % patients had perimenopausal abnormal uterine bleeding and 18% had post menopausal bleeding. *The study sample is similar to that of Pasrija, Trivedi and Narula 2004 whose sample had 89% perimenopausal and 11% post menopausal patients* .Ratio of incidence of perimenopausal to post menopausal abnormal uterine bleeding in GRH OP statistics is about 1:4.

In our study,14% were diabetic,22% had hypertension,26% had BMI>25.Association of diabetes, hypertension and obesity places the patient at high risk in the evaluation of abnormal uterine bleeding to rule out malignancy of the endometrium.Patients with diabetes have a relative risk of 8 and obesity have relative risk of 10 for developing endometrial carcinoma.[Novak et al]

In our study, taking more than 5 mm as the cut off value for the sum of anterior and posterior wall thickness, 70 % patients had endometrial thickening . Out of which 62% had generalised thickening and 8% had focal thickening. *In study by goldstein SR, Zelster, Horan, with single layer cut off thickness <3 mm, 23% had generalised hyperplasia, 1% had focal hyperplasia.*

In our study, out of 31 cases of globally thickened endometrium 38.7% had proliferative endometrium , 32.2% had secretory endometrium and 29% had cystoglandular hyperplasia, 3.2 % had adenomatous hyperplasia. In goldstein's study, 50% had proliferative endometrium 50% had hyperplasia [14].

According to Descargues , Lemercier & colleagues 2001 while comparing the results of sonohysterography and histopathological examination, positive predictive value & negative predictive value were 83% and 100 % .

In our study positive predictive value was low 37% but negative predictive value was 100%. This may be due to interpretation errors associated with simple mucous hypertrophy as hyperplasia. Also patients with irregular cycles, the timing of the procedure could not be exactly made at the early proliferative phase and quite a number of patients around 26% had secretory endometrium on the HPE.

This contributes to 57% of patients with suspected hyperplasia.In few cases,when cavity was forcibly distended with, there was a decrease in the thickness of endometrium by 1-2 mm with SIS compared to TVS.

In our study clinical diagnosis of fibroids was made in 10%.This increased to 20% with TVS.With saline instillation,diagnosis of fibroids increased to 22% since a 2.5*2.5 cm submucosal fibroid came into view only after saline instillation.

Among findings exclusively diagnosed by SIS, endometrial polyps were found in 8.5% , sub mucous fibroids in 8.5%, intramural fibroid distorting cavity in 12%, malignancy in 2.8%. *In study by Pasrija, Trivedi S.S, Narula ML 2004, 3.4% had sub mucous fibroids, 6.8% had polyps and 3.4% had suspected carcinoma thus almost correlating with our study.*

In our study,the sensitivity of SIS in comparison with hysterectomy specimens is 100% for polyp, sub mucous fibroids , intramural fibroids distorting cavity and malignancy . Conventional TVS missed,\ polyps, and suspected only 4% sub mucous fibroids.

The sensitivity of SIS in the study by Valenzano, Lijoi and colleagues is also 100% in perimenopausal women. In post menopausal women, the sensitivity of SIS was 100% for hyperplasia,93.8% for polyps but it decreased to 75% for submucosal fibroids.

Diagnosis of polyps were 8% in our study by SIS.In the actual specimens only 6% polyps were identified.One suspected malignant polyp was a foreign body,forgotten lippes loop partially embedded in the myometrium.Diagnosis of submucous fibroids were 8% by SIS, but only 6% were submucosal in actual specimen.An intramural fibroid distorting the cavity was mistaken for submucosal fibroid in SIS.

In our study,the specificity of SIS for diagnosing polyps, sub mucous fibroids, intramural fibroids distorting cavity and malignancy are 96.85%, 96.6%, 97% respectively. *According to Pasrija and others , specificity was 88.5% on the whole.(less than our study)* .

Negative predictive value overall is 100% in our study. Positive predictive value for polyps, sub mucous fibroids, intramural fibroids distorting cavity and malignancy are 75%, 75%,83.3, 66.6% respectively.

In Deuholm, Forman & colleagues 2001 study, positive predictive values were 98% and negative predictive values were 85% thus correlating with our study.

According to Nanda. S, Chadha N & colleagues, in whose study hysterectomy findings were kept as the gold standard, the sensitivity & specificity were 100% for polyps , 97.8% comparable to our study. For submucous fibroids, sensitivity was 89.5%, specificity 100%where as our study had 100% sensitivity.

Detection of focal hyperplasia is significant as 75 % with focal hyperplasia had abnormal histopathology of endometrium requiring surgical interventions.

In our study only 2% patients complained of abdominal pain after the procedure. There was no severe complications as endometritis. This is in par with Bonnamy L, Marret H and others, in whose study out of 81% patients, the incidence of pelvic pain was 1.2% and endometritis 1.2%.

SUMMARY

SUMMARY

1. Fifty consecutive patients in peri & post menopausal age group with abnormal uterine bleeding attending GRH gynaecology OP, were taken up for study.

2. Majority belonged to the age group of 40-50 yrs (80%), 12% were in 51-55 yrs group.

3. Parity of 2 and 3 were maximum at 60%,followed by parity of 4 in 32%.only one patient out of 50 was a nullipara.

4. Majority (80%)belonged to low socio economic status.

5. Perimenopausal women constituted 82% and post menopausal women 18%.

6. Clinical presentation of abnormal uterine bleeding were: menorrhagia and polymenorrhagia in 75%,polymenorrhea in 9.75% and menometrorrhagia in 14.6%

7. Post menopausal women with bleeding per vaginum reported early within a month of onset of symptoms whereas perimenopausal patients reported late within a year of onset of symptoms.

8. High risk factors for endometrial cancer existed ithe form of diabetes in 14%,hypertension in22%,obesity in 24%.Overt anemia was present in 26% of women.

9. Associated clinical gynaecological conditions were present in 22% patients, out of which the commonest was fibroid in 46%.

10. Associated findings in TVS & SIS were: fibroids in 20% adenomyosis in 14%, hydrosalphinx in 2%, ovarian cyst in 4%.

11. Generalised endometrial thickening was diagnosed in 62% and focal endometrial thickeing in 8 % in SIS

12. Out of those with generalised thickening 32.25% had proliferative endometrium, 35.48% had secretory endometrium, 29% had cysto glandular hyperplasia 3.2% had simple adenomatous hyperplasia.

13. Out of those with focal hyperplasia ,25% had atypical adenomatous hyperplasia, 25% had disorderly proliferlative endometrium, 25% cysto glandular hyperplasia, 25 % adenocarcinoma.

14. Sensitivity and negative predictive value of SIS with HPE is 100% but specificity & positive predictive value are low 42% &37% respectively

15. In SIS endometrial polyps were diagnosed is 8% ,submucous fibroids in 8 % focal thickening of endometrium in 8% , intramural fibroids distorting cavity in 10% suspected malignancy 4%.

16. (one)2% intramural fibroid was mistaken for a sub mucous fibroid in SIS,(one)2% polyp (malignant) by SIS actually turned out to be forgotten lippes loop (in hysterectomy specimen).

17. Sensitivity, negative predictive value of SIS for diagnosis of polyps, submucous fibroids and malignancy was 100%.The sensitivity and negative predictive value for diagnosing intra mural fibroids distorting cavity was 83.33% and 96.66%.

18. Specificity for polyps, sub mucous fibroids both 96.5% each, for intramural fibroids distorting cavity 100% and malignancy 97% .Positive predictive value for diagnosing malignancy was low 66.6%, for fibroids distorting cavity 100%, for both sub mucous fibroids & polyps each 75%.

CONCLUSION

CONCLUSION

Saline infusion sonohysterography is an ideal,cost effective,minimally invasive investigation to be done as the first step in the evaluation of abnormal uterine bleeding in perimenopausal and post menopausal patients.

This will alone be sufficient in most patients except very few who will require subsequent confirmation with sophisticated investigation like hysteroscopy.

SIS has an overall sensitivity and negative predictive value of 100% but positive predictive value and specificity are less. But it is still high for detecting focal endometrial abnormalities.

Combined with histopathology, specificity and positive predictive value can be increased further, false positives can be reduced.

The findings in SIS correlated almost in 76% of cases with histopathology of endometrium in fractional curettage and 95% with hysterectomy specimens.

Accordingly, the best suited management can be chosen for the individual patient among the varied options of medical, minimally invasive or surgical procedures.

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PROFORMA

NAME:

AGE:

UNIT: Date of admission: Date of SIS: Address:

Socio economic status:

IP NUMBER:

MARITAL STATUS:

PARITY:

MENARCHE:

DURATION OF CYCLES:
(before the presenting complaint)
DURATION OF FLOW:
Perimenopausal Postmenopausal

COMPLAINTS:

Duration of cycles:
Duration of flow:
H/O amenorrhea before bleeding:yes/no;if yes,duration-
Regularity of cycles:
Number of diapers used/day
H/O passing clots:
H/O dysmenorrhea : yes/no; if yes,spasmodic/congestive
Last menstrual period:
Intermenstrual bleeding:
Postcoital bleeding:

Menopause
Duration of bleeding;
h/o passing clots:
Discharge PV:
Abdominal pain:

TYPE OF ABNORMAL UTERINE BLEEDING:

Other bleeding tendencies:
H/O abnormal discharge pv
H/O thyroid dysfunction: weight gain:
H/O IUCD inserttion/OCP intake:
H/O abortion/recent child birth:
H/O intake of sex hormones:
H/O sterilization:

GENERAL EXAMINATION:
Height: Weight: Body mass index:
Anaemia:yes/no
Edemalegs:yes/no
Others:
Breast:
Thyroid:

VITAL SIGNS: pulse: blood pressure:

EXAMINATION OF ABDOMEN:

SPECULUM EXAMINATION:

BIMANUAL EXAMINATION:

EVALUATION: haemoglobin%: blood grouping: CT: BT: CRT:

TRANS VAGINAL SONOGRAPHY:

SALINE INFUSION SONOHYSTEROGRAPHY:

Endometrial thickness:
Endometrial hyperplasia: localized/generalized
Polyps
Fibroids
Intra uterine adhesions:
Other significant findings:

histapathology if available:

MASTER CHART

S.NO	NAME	AGE	IP UMBER	PARITY	SOCIO ECONOMIC STATUS	TYPE OF AUB	DURATION OF SYMPTOMS	ASSOCIATED MEDICAL COMPLICATIONS	CLINICAL DIAGNOSIS	TRANSVAGINAL SONOGRAPHY		SALINE INFUSION SONOHYSTEROGRAP			
											ASSOCIATED FINDINGS	CAVI			
												THICKNESS	GH	FH	PC LY P
1	Meena	43	357285	P3	IV	PEMB	1Om	Ane	Cervical polyp	2		THIN			
2	Lilly pushpum	55	380637	P4	IV	PEMB	2y	HT	DUB	12		6+6	√		
3	Tamilselvi	40	380500	P1	III	PEMB	2m	OW	R ADNEXAL MASS	5	Rhydrosalpinx	2+2			
4	Kasthuri	48	380496	P5	V	PEMB	1y	-		8		4+4	√		
5	Kuruvamal	40	380494	P4	V	PEMB	1y	-		10	ADENOMYOSIS	5+5	√		
6	Thavamani	43	380988	P2	III	PEMB	3m	-		24		7+7	√		1. 2x 1. 8C M
7	Meenakshi	49	381002	P2	V	PEMB	6 M	OW		8	I.M myoma	4+4	√		
8	Mariamal	43	343695	P3	V	PEMB	2 Y	OW ANE HT DM		18		8+8	√		
9 222	Irulayee	45	396161	P3	V	PEMB	1.5 Y	-	cervicalpolyp	7	adenomyosis	3+3	√		
10	Panjavarnam	45	387209	P3	V	PEMB	1 Y	-		6		3+3	√		
11	Chinathai	55	387331	P2	V	PMB	6 M	Ane		18		8+9		√	
12	Velathai	47	387332	P7	IV	PEMB	1 Y	Ow Ane	fibroid	4	I.M myoma	2+2			
13	Guruvamal	55	381091	P5	V	PMB	2 M	OB		26		2+2			
14	Kaliammal	50	388350	P6	IV	PEMB	10 M	HT		14		7+7			
15	Mari	45	389045	P3	V	PEMB	8 M	DM		6	adenomyosis	3+3			
16	Rathi	40	389040	P3	V	PEMB	6 M			12	adenomyosis	6+6			
17	Rahmath Beevi	42	390755	P3	V	PEMB	1 Y	OW		4	I.M myoma	2+2			

18	Pappa	45	406031	P2	V	PEMB	7 M	-		12		6+6	√		
19	Saratha	45	405606	P5	V	PEMB	6 M	Ane	L adnexal mass	7	Ovarian cyst-func	4.5+4.5	√		
20	Saroja	42	406835	P3	V	PEMB	2 Y	-		4		2+2			
21	Soundammal	43	415209	P2	V	PEMB	1 Y	OW		12		6+6	√		
22	Veni	45	415402	P2	V	PEMB	4 M	DM		4	I.M myoma	2+2			
23	Jeyalakshmi	40	424175	P2	V	PEMB	6 M	-		6	I.M myoma+ adenomyosis	3+3			
24	Sundari	42	430956	P2	V	PEMB	7 M	DM		16		7+9		√	
25	Vijayalakshmi	40	423796	P4	V	PEMB	2 Y	OW		8	adenomyosis	4+4	√		
26	Mariammal	54	446327	P4	V	PEMB	2 Y	OW HT		8	adenomyosis	4+4	√		
27	Amirtham	55	446465	P5	V	PMB	5 D	OW HT		8		4+4			
28	Irulayee	47	446770	P4	V	PEMB	6 M	OW		25		11+ 14		√	
29	Lakshmi	50	453682	P3	V	PEMB	8 M	-	L adnexal mass	24	L ovarian cyst-func	11+ 13		√	
30	Malarkodi	48	454071	P2	V	PEMB	6 M	-		10		4+4	√		
31	Dhanalakshmi	49	497558	P2	V	PEMB	4 Y	OW,Ane,HT		10		5+5	√		
32	Muniammal	45	443582	P3	V	PEMB	3 M	DM Ane		10		5+5	√		
33	Rajeshwari	40	436123	P3	IV	PEMB	2 M	Ane		4		2+ 2			
34	Palaniammal	40	454709	P2	V	PEMB	1Y	-		6		3+3			
35	Pandiamal	50	455546	P2	III	PMB	2 W	HT	Cervical polyp	2		thin			
36	Chandra	49	455557	P4	V	PMB	2 D	-		2		thin			
37	Pushpam	50	455099	P3	V	PEMB	I Y	OW HT		23		10+ 10	√		1*1
38	Ayammal	46	447370	P2	V	PMB	2 D	DM		4		2+2			
39	Chellathai	46	447364	P3	V	PEMB	8 M	-	Fibroid	6	Sub serous+I.M	3+3	√		
40	Nagammal	52	470244	P1	V	PEMB	6 M	HT		18		9+9	√		
41	Pushpavalli	50	470247	P7	V	PMB	10 D			2		thin			
42	Panjavarnam	45	408370	P2	V	PEMB	2 Y	DM HT	Fibroid	6	I.M myoma	3+3	√		
43	Chitamal	47	473063	P5	V	PEMB	4 Y	Ane		18		9+9			
44	Mookamal	50	473061	P2	V	PEMB	6 M	HT				3+3			
45	Malayamal	50	473068	P4	V	PMB	1 W	-		4		2+2			
46	Akkamal	50	473069	P3	V	PMB	3 D	-		8		4+4	√		
47	Sundaramal	46	473979	P3	IV	PEMB	2 Y	Ane	Fibroid	6	I.M myoma	3+3	√		
48	Sangamal	46	473978	PO	V	PEMB	6 M	-	Fibroid	3	Multiple I.M	1.5+ 1.5			

											myoma				
49	Alagu pillai	45	47399	P1	V	PEMB	3M	Ane		2		thin			
50	Andichi	40	473474	P4	V	PEMB	1Y	Ane		18		9+9	√		